

U.S. Patent Application No. 10/020,861

AMENDMENTS TO THE CLAIMS

A detailed listing of all claims that are, or were, in the present application, irrespective of whether the claim(s) remains under examination in the application are presented below.

1. (Original) An arrangement including in combination,
  - a container for transporting wafer-shaped objects having container walls;
  - a container door fitted in said container and comprising two walls, spaced apart from and parallel to each other;
  - recesses worked into the container walls in the region of said container door which is fitted therein;
  - means for locking and unlocking said container door comprising locking elements provided within said container door between said two parallel walls and being displaceable into a moved-in end position and into a moved-out end position and, when moving out, penetrate into said recesses within the container walls,
  - every locking element being in the form of a projection from a plate which is directed parallel to the outwardly directed wall of said container door, wherein all plates share a common drive in form of a rotatable disk driven by a motor and acting in the locking and unlocking direction for connecting rods provided for displacing the plates, the plates being fixed in the moved-in end position and in the moved-out end position by said connecting rods;
  - means for providing that the penetration of the locking elements into said recesses is effected along a curved path as a result of a movement of each locking element into a corresponding recess as well as in a direction normal thereto,

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said means for providing a curved path further comprising structure to maintain and move every plate parallel to an outwardly directed wall of said two parallel walls of the container door by means of couplers, said couplers for every plate being parallel to each other and rotatably connected to said plate and also to said outwardly directed wall so that, as a result of the couplers, there is a predetermined distance between every plate and said outwardly directed wall in the moved-in state, which distance decreases during the outward movement until the locking element comes into contact with a contact surface in the recess against which the locking element is pressed under tension in its moved-out end position.

2. (Original) The arrangement according to claim 1, wherein the locking elements are adjacent to one another.
3. (Original) The arrangement according to claim 2, wherein one end of each connecting rod is rotatably fitted to a plate, the other end being rotatably fitted opposite thereto at a disk so as to lie outside an axis thereof, and wherein the plates are fixed in the moved-out end position by rotating the disk beyond a dead center position.
4. (Original) The arrangement according to claim 1, wherein one end of each connecting rod is rotatably fitted to a plate, the other end being rotatably fitted opposite thereto at a disk so as to lie outside an axis thereof, and wherein the plates are fixed in the moved-out end position by rotating the disk beyond a dead center position.

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5. (Twice Amended) A transport unit for wafer-shaped objects, the unit comprising:  
a container for holding the objects, the container comprising a plurality of container  
walls, the container walls having a plurality of recesses, and  
a container door fitted in said container and comprising two door walls spaced apart from  
each other and a locking and unlocking arrangement positioned between the two door walls, the  
locking and unlocking arrangement comprising a plurality of locking elements  
movable between a moved-in end position and a moved-out end position, each of said plurality  
of locking elements comprising a projection from a plate with a pair of opposed edges, each of  
said plurality of locking elements directed to one of said plurality of recesses in said container  
wall, whereby in the moved-out end position the locking elements penetrate into said recesses in  
the container walls, the locking and unlocking arrangement further comprising a plurality of  
parallel couplers pivotally mounted to one of the door walls and to each of said plate edges such  
that each of said plates is parallel to the door walls, whereby the penetration of each of said  
locking elements into one of said plurality of recesses is effected along a curved path.

6. (Previously Presented) The transport unit of claim 5 wherein each locking element is a  
component part of the plate.

7. (Canceled).

8. (Canceled).

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9. (Previously Presented) The transport unit of claim 5 wherein each said locking element is rotatably coupled to one of said couplers.

10. (Twice Amended) The transport unit of claim 5 further comprising a plurality of connecting rods, wherein each of said plurality of connecting rods has two ends with one end of each displacing element rotatably connecting to the plate and the other end coupled to the locking element.

11. (Canceled).

12. (Twice Amended) A transport unit for wafer-shaped objects, the transport unit comprising a container and a door to close the container, the door comprising a pair of, spaced apart door walls and a locking and unlocking arrangement positioned between the door walls, the locking and unlocking arrangement comprising:

first and second plates, each of said first and second plates comprising a locking element extending therefrom and first and second opposed edges, each of said locking elements extendable out of the door to engage a recess in the container, at least one of said locking elements extending in a first locking element direction and at least one other of said locking elements extending in a second locking element direction to engage the recesses in the container, the first locking element direction generally opposite to the second locking element direction;

a rotatable disk and a plurality of connecting rods, the rotatable disk in rotatable mechanical communication with each of the locking elements via the connecting rods; and

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first and second parallel couplers pivotally attached to each edge of each of said plates, each of said couplers having two ends, one end of each of said couplers attached to and rotatable about a first coupler axis at one of the parallel walls and the other end of each of said couplers attached to and rotatable about a second coupler axis generally parallel to the first coupler axis and proximate one of said locking elements, said first and second couplers attached to the first plate axially extending in a first coupler direction and said first and second couplers attached to said second plate axially extending in a second coupler direction different from the first coupler direction such that the locking elements remain generally parallel to said door walls and are displaced outwardly in a curved path.

13. (Previously Presented) The transport unit of claim 12 wherein each of the plates is coupled to the rotatable disk such that rotation of the disk moves the plates inwardly and outwardly with respect to the rotating disk.

14. (Previously Presented) The transport unit of claim 13 wherein the connecting rod extends between the disk and the plate.

15. (Previously Presented) The transport unit of claim 13 wherein each plate and the two couplers and the one of the parallel walls of the door form a parallelogram.

16. (Twice Amended) A sealable and transportable unit for wafer-shaped objects, the transportable unit comprising:

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a container including a first wall and a second wall and one or more recesses in each of the first wall and second wall; and

a door with a seal between the door and the container, the door comprising a pair of door walls and an arrangement for locking and unlocking the door disposed within the door between the pair of door walls,

wherein the arrangement for locking and unlocking the door comprises a plurality of plates with lateral edges, a shared drive, and a plurality of parallel couplers pivotally attached to each plate lateral edge, each plate comprising a locking element projecting from the plate, the shared drive comprising a disk rotatable by a motor and rotatably mechanically connected to each of said plurality of plates by a connecting rod, each of said plurality of locking elements extendable out of the door by the shared drive for penetration into one of a plurality of recesses in the container, each of said plurality of couplers further pivotally attached to one of said door walls such that each of said plurality of locking elements remains parallel to one of said door walls as each of said plurality of locking elements is displaced along a curved path between a moved-in end position and a moved-out end position in which the locking element is disposed in and presses against a surface of one of said recesses.

17. (Previously Presented) The transportable unit of claim 16, wherein each of said couplers is rotatably connected to one of the walls along a first axis parallel to the wall and each of said couplers is further rotatably connected at the locking elements with a second axis parallel to the first axis, the couplers providing the curved path of the locking element.

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18. (Twice Amended) A container door fitted in a container and having a pair of door walls and a locking and unlocking arrangement disposed between the pair of door walls, the locking and unlocking arrangement comprising a plurality of projections and a disk rotatable by a motor and in mechanical communication with each of said plurality of projections, each of said plurality of projections extending from a plate having opposed edges and held operably parallel to the door walls by a plurality of parallel couplers, each of said plurality of couplers pivotally attached to one of said door walls and further pivotally attached proximate each of said plate opposed edges, the projections each movable in a curved path between a moved-in state and a moved-out state by a cooperation between the disk and couplers, whereby in the moved-out state the locking elements penetrate into said recesses in the container walls, wherein the projections remain substantially parallel to said door walls.

19. (Twice Amended) A transport unit for wafer-shaped objects, the transport unit comprising a container and a door to sealably close the container, the door comprising a pair of door walls and a locking and unlocking arrangement positioned between the door walls, the locking and unlocking arrangement comprising:

a plurality of locking elements, each said locking element projecting from a plate and extendable out of the door to engage a recess in the container and pivotally affixed to one of the door walls by a plurality of parallel couplers such that each of said plurality of locking elements is functionally parallel to the door walls, at least one of said plurality of locking elements extending in one direction and at least one other of said plurality of locking elements extending in an opposite direction with respect to the door;

a plurality of connecting rods; and

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a rotatable disk positioned in the door, the rotatable disk coupled to said plurality of plates by the connecting rods so as to simultaneously extend at least one of said locking elements in one direction and in an opposite direction, each said locking element extended along a curved path.

the connecting rods and disk having a beyond dead center position for fixing the locking elements in a moved-in end position or a moved-out end position.

20. (Previously Presented) The transport unit of claim 5, wherein each of said plurality of locking elements is generally coplanar to one of said plates.

21. (Previously Presented) The transport unit of claim 12, wherein each said locking element extending from one of said first and second plates is generally coplanar therewith.

22. (Previously Presented) The unit of claim 16, wherein each said locking element projecting from one of said plates is generally coplanar therewith.

23. (Previously Presented) The container door of claim 18, wherein each of said plurality of projections extending from a plate is generally coplanar therewith.

24. (Previously Presented) The transport unit of claim 19, wherein each of said locking elements projecting from one of said plates is generally coplanar therewith.